

## DETAILED ACTION

1. This is a non-final rejection in response to the claims and remarks filed on 12/29/09

### ***Claim Rejections - 35 USC § 102***

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 37-39, 42, 44-47, 50, 51-53, 57, and 68-69, are rejected under 35 U.S.C. 102(b) as being anticipated by Oshima et al. (US 5,463,212).
4. In respect to claim 37, Oshima et al. disclose a security document comprising: a substrate 4b, a layer of polymeric material 2 having an upconverting fluorescent material, and a coating 4a containing a refractive pigment (Abstract, Fig. 9); signaling of the document with an infrared ray source results in emitted visible light (shorter wavelength) (Col. 5, 51-65).
5. In respect to claims 38-39, 42, and 57, the substrate 4b has a polymeric base layer 2 thereon, formed of a transparent polymeric binder 8 (Col. 12, 28-29) comprising for example polyester et al. (Col. 12, 35-39) and having an upconverting material (fluorescing grains) 7 uniformly dispersed therein (Fig. 3).

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6. In respect to claims 44-47, the coating 4a is in intimate contact with the polymeric layer 8 containing the upconverting material 7 (Fig. 3); the coating 4a is formed of a resin with pigments of titanium oxide (titanium dioxide, synonymous) dispersed therein (Col. 12, 15-19).

7. In respect to claim 50, although Oshima et al. does not specifically disclose that the binder and titanium oxide are substantially transparent to excitation wavelengths, while features of an apparatus may be recited either structurally or functionally, claims directed to an apparatus must be distinguished from the prior art in terms of structure rather than function. *In re Schreiber*, 128 F.3d 1473, 1477-78, 44 USPQ2d 1429, 1431-32 (Fed. Cir. 1997). (MPEP 2114). Oshima et al. has an identical structure as claimed.

8. In respect to claims 51-53, Oshima et al. disclose the claimed invention for the reasons stated above because index of refraction is a material properties which is inherent in selected materials of which Oshima et al. discloses.

9. In respect to claims 68 and 69, the upconverting material is subjected to infrared rays and emits visible light (Col. 5, 51-65).

### ***Claim Rejections - 35 USC § 103***

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the

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invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

11. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148

USPQ 459 (1966), that are applied for establishing a background for determining

obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

12. Claims 37, 46-49, 54, and 56, are rejected under 35 U.S.C. 103(a) as

unpatentable over Hardwick et al. (US 6,471,248) in view of Ooshima et al. (US 5,463,212).

13. In respect to claims 37 and 46-48, Hardwick et al. disclose a security document comprising a substrate having a layer of polymeric material 10 containing an upconverting fluorescent material 20 (Col. 5, 18) and coatings 13-16 comprise a refractive pigment (titanium dioxide) in a cross-linkable polymeric binder (Col. 4, 14-23, Fig. 1). Although Hardwick et al. disclose fluorescent material, they are not necessarily upconverting however Ooshima et al. discloses using upconverting fluorescent materials and it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the fluorescent material taught in Hardwick et al. with an upconverting material in view of Ooshima et al. to provide a material that reacts to IR light to produce visible light (and to cooperate with equipment therewith). All of the claimed elements were known in prior art and one skilled in the art could have combined the elements as claimed by known methods with no change in their

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respective functions, and the combination would have yielded predictable results to one of ordinary skill in the art at the time of the invention. The two different wavelength conversion properties of fluorescents (downconverting/upconverting) are known and either could be used in Hardwick et al. with expectable results (e.g. converting IR to visible light).

14. In respect to claim 49, Hardwick et al. as modified by Ooshima et al. disclose all of the claimed subject matter but do not specifically disclose the polymeric binder comprising, for example, acrylics, polyester, or polyurethane however it would have been obvious to one having ordinary skill in the art at the time the invention was made to provide any of these materials as the polymeric binder, since it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice. *In re Leshin*, 125 USPQ 416.

15. In respect to claims 54 and 56, Hardwick et al. further teach that the polymeric material 10 is transparent (Col. 4, 5-7) and the opacifying coatings containing the refractive pigment (titanium oxide) are only applied partly over the transparent substrate 10 to form a window on at least one side of the document (Fig. 1). Although Hardwick et al. do not specifically disclose that the signals emitted from parts of the substrate covered by the opacifying coatings are stronger than signals emitted from the uncovered region however while features of an apparatus may be recited either structurally or functionally, claims directed to an apparatus must be distinguished from the prior art in terms of structure rather than function. *In re Schreiber*, 128 F.3d 1473,

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1477-78, 44 USPQ2d 1429,1431-32 (Fed. Cir. 1997). (MPEP 2114). Hardwick et al. has an identical structure as claimed.

16. Claim 40 is rejected under 35 U.S.C. 103(a) as being unpatentable over Oshima et al. (US 5,463,212). Oshima et al. disclose all of the claimed subject matter but do not specifically disclose the base layer comprising a paper or fibrous material (Oshima only states 4b, construed to be the base layer in this case, may be transparent or opaque) however it would have been obvious to one having ordinary skill in the art at the time the invention was made to provide any of these materials as the base layer, since it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice. *In re Leshin*, 125 USPQ 416.

17. Claims 58 and 59 are rejected under 35 U.S.C. 103(a) as being unpatentable over Oshima et al. (US 5,463,212) in view of Curatolo (US 6,165,609).

18. In respect to claim 58, Oshima et al. substantially disclose the claimed subject matter for the reasons above but do not disclose a concentration of upconverting material less than 1% by weight however Curatolo teach a similar fluorescent upconverting material (taggant compound) wherein it comprises 0.05% to 1% by weight of the film forming material (Col. 3, 37-40) and it would have been obvious to substitute the large grain fluorescent taught in Oshima et al. with smaller rare earth metal taggants (having less than 1% weight) in view of Curatolo. The claim would have been obvious

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because the substitution of one known element for another would have yielded predictable results to one of ordinary skill in the art at the time of the invention. Curatolo teaches that for these particular upconverting materials, such weights are sufficient for detection (Col. 3, 24-26).

19. In respect to claim 59, Curatolo discloses the weight may range from 0.001% to 5% and the disclosure of Curatolo is determined to have sufficient specificity to teach that range of (0.0025% to 0.25%).

20. Claim 70 is rejected under 35 U.S.C. 103(a) as being unpatentable over Oshima et al. (US 5,463,212) in view of Hardwick et al. (US 6,471,248). Oshima et al. substantially disclose the claimed subject matter for the reasons above but do not disclose the opacifying coating only partly covering the substrate however Hardwick et al. teach this feature as detailed above and it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the opacifying coating taught in Oshima et al. to only partially cover the substrate in view of Hardwick et al. to provide variegated security effects from different sides of the document (and/or transmitted/incident light) (Col. 2, 48-65).

### ***Response to Arguments***

21. In respect to claims 37-39, 42, 44-47, 50-53, 57, and 68-69, applicant's arguments filed on 12/29/09 have been fully considered but they are not persuasive.

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Although not addressed in the remarks, independent claim 37 has been amended.

Omission of “and” changes the recitation “a security document comprising a substrate including at least one layer of polymeric material and containing an upconverting fluorescent material...” to “a security document comprising a substrate including at least one layer of polymeric material containing an upconverting fluorescent material”. This change now requires the polymeric material layer to contain the upconverting fluorescent material (rather than the security document comprising both a substrate and an upconverting fluorescent material, with no required interrelation). Regardless, of the amended changes, the application is rejected for the reasons stated above.

22. The applicant contends that Ooshima et al. does not anticipate the present application for the following reasons: “Ooshima et al. do not describe a substrate including at least one layer of polymeric material containing an upconverting fluorescent material” and specifically that the fluorescent grains of Ooshima et al. are not necessarily upconverting fluorescent materials. The examiner respectfully disagrees.

23. As should be immediately apparent, Ooshima et al. do disclose a substrate 4b including at least one layer of polymeric material containing an upconverting fluorescent material (information layer 2) (Fig. 9). Information layer 2 consists of a polymeric material 8 containing fluorescent grains 7 (Fig. 3). In many instances throughout the specification the fluorescent grains are disclosed to emit light (shorter wavelength, higher energy) when stimulated with infrared rays (longer wavelength, lower energy) (e.g. Col. 5, 51-65). This exactly fits the definition of “upconverting fluorescent material” in both the applicant's arguments (“only upconverting materials are able to emit shorter

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wavelengths of light") and specification ("an 'upconverting' material is a material which absorbs electromagnetic radiation of a low energy level, e.g. Infra-red, and emits electromagnetic radiation at a higher energy level, such as visible light) (Remarks, Pg. 2; Specification, Pg. 1).

24. In respect to claims 37, 46-48, 54, and 56, the applicant is correct in that Hardwick et al. does not explicitly disclose the fluorescent material is upconverting, and the amended subject matter did not necessitate the change in rejection required.

### ***Conclusion***

25. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kyle Grabowski whose telephone number is (571)270-3518. The examiner can normally be reached on Monday-Thursday, every other Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dana Ross can be reached on (571)272-4480. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.



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